## Math 211 Quiz 23

W 07 Aug 2019

Your name:	

## **Exercise**

 $(5\,\mathrm{pt})$  Solve the following nonhomogeneous 1st-order linear initial value problem, using the laplace transform:

$$y' + y = e^{-t},$$
  $y(0) = -1.$  (1)

Hint: Recall that, from the definition of the lapace transform,

$$\mathcal{L}\{y'\}(s) = s\mathcal{L}\{y\} - y(0).$$

The following transform–inverse-transform pairs may be useful:

$$\mathcal{L}\left\{e^{\alpha t}\right\} = \frac{1}{s-\alpha}, \qquad s>\alpha; \qquad \qquad \mathcal{L}\left\{t^n e^{\alpha t}\right\} = \frac{n!}{(s-\alpha)^{n+1}}, \qquad s>\alpha.$$